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APPLICATION NO.	FILING DATE	FIRST NAMED INVENTOR	ATTORNEY DOCKET NO.	CONFIRMATION NO.
10/790,750	03/03/2004	Dong-Woo Cho	80800-000111/US	2879

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EXAMINER

SHECHTMAN, SEAN P

ART UNIT PAPER NUMBER

2125

DATE MAILED: 05/26/2005

Please find below and/or attached an Office communication concerning this application or proceeding.

# Office Action Summary

Application No.

10/790,750

Applicant(s)

CHO ET AL.

Examiner

Sean P. Shechtman

Art Unit

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-- The MAILING DATE of this communication appears on the cover sheet with the correspondence address --

## Period for Reply

A SHORTENED STATUTORY PERIOD FOR REPLY IS SET TO EXPIRE 3 MONTH(S) FROM THE MAILING DATE OF THIS COMMUNICATION.

- Extensions of time may be available under the provisions of 37 CFR 1.136(a). In no event, however, may a reply be timely filed after SIX (6) MONTHS from the mailing date of this communication.
- If the period for reply specified above is less than thirty (30) days, a reply within the statutory minimum of thirty (30) days will be considered timely.
- If NO period for reply is specified above, the maximum statutory period will apply and will expire SIX (6) MONTHS from the mailing date of this communication.
- Failure to reply within the set or extended period for reply will, by statute, cause the application to become ABANDONED (35 U.S.C. § 133). Any reply received by the Office later than three months after the mailing date of this communication, even if timely filed, may reduce any earned patent term adjustment. See 37 CFR 1.704(b).

## Status

- 1) ☒ Responsive to communication(s) filed on 13 May 2005.
- 2a) ☒ This action is **FINAL**. 2b) ☐ This action is non-final.
- 3) ☐ Since this application is in condition for allowance except for formal matters, prosecution as to the merits is closed in accordance with the practice under *Ex parte Quayle*, 1935 C.D. 11, 453 O.G. 213.

## Disposition of Claims

- 4) ☒ Claim(s) 1-15 is/are pending in the application.
- 4a) Of the above claim(s) \_\_\_\_\_ is/are withdrawn from consideration.
- 5) ☐ Claim(s) \_\_\_\_\_ is/are allowed.
- 6) ☒ Claim(s) 1,3-6 and 9-15 is/are rejected.
- 7) ☒ Claim(s) 2,7 and 8 is/are objected to.
- 8) ☐ Claim(s) \_\_\_\_\_ are subject to restriction and/or election requirement.

## Application Papers

- 9) ☐ The specification is objected to by the Examiner.
- 10) ☒ The drawing(s) filed on 03 March 2004 is/are: a) ☒ accepted or b) ☐ objected to by the Examiner.  
Applicant may not request that any objection to the drawing(s) be held in abeyance. See 37 CFR 1.85(a).  
Replacement drawing sheet(s) including the correction is required if the drawing(s) is objected to. See 37 CFR 1.121(d).
- 11) ☐ The oath or declaration is objected to by the Examiner. Note the attached Office Action or form PTO-152.

## Priority under 35 U.S.C. § 119

- 12) ☒ Acknowledgment is made of a claim for foreign priority under 35 U.S.C. § 119(a)-(d) or (f).
- a) ☒ All b) ☐ Some \* c) ☐ None of:
1. ☒ Certified copies of the priority documents have been received.
2. ☐ Certified copies of the priority documents have been received in Application No. \_\_\_\_\_.
3. ☐ Copies of the certified copies of the priority documents have been received in this National Stage application from the International Bureau (PCT Rule 17.2(a)).
- \* See the attached detailed Office action for a list of the certified copies not received.

## Attachment(s)

- 1) ☐ Notice of References Cited (PTO-892)
- 2) ☐ Notice of Draftsperson's Patent Drawing Review (PTO-948)
- 3) ☐ Information Disclosure Statement(s) (PTO-1449 or PTO/SB/08)  
Paper No(s)/Mail Date \_\_\_\_\_
- 4) ☐ Interview Summary (PTO-413)  
Paper No(s)/Mail Date. \_\_\_\_\_
- 5) ☐ Notice of Informal Patent Application (PTO-152)
- 6) ☐ Other: \_\_\_\_\_

HC

### **DETAILED ACTION**

1. Claims 1-15 are presented for examination. Claims 1, 3, 4, 7-12, and 15 have been amended.

#### ***Claim Rejections - 35 USC § 112***

The following is a quotation of the second paragraph of 35 U.S.C. 112:

The specification shall conclude with one or more claims particularly pointing out and distinctly claiming the subject matter which the applicant regards as his invention.

Claims 9-12 and 14-15 are rejected under 35 U.S.C. 112, second paragraph, as being indefinite for failing to particularly point out and distinctly claim the subject matter which applicant regards as the invention.

2. Referring to claims 9-12, the examiner respectfully submits that all variables should be clearly defined or at least referred to as constants. It is unclear what is required by the term to.
3. Claim 14 recites the limitation "the tool" in line 9. There is insufficient antecedent basis for this limitation in the claim.
4. Claim 15 recites the limitation "the tool" in line 12. There is insufficient antecedent basis for this limitation in the claim.

#### ***Claim Rejections - 35 USC § 102***

The text of those sections of Title 35, U.S. Code not included in this action can be found in a prior Office action.

5. Claims 1, 3-6, and 13 are rejected under 35 U.S.C. 102(b) as being anticipated by U.S. Pat. No. 4,423,481 to Reid-Green.

Referring to claims 1 and 13, Reid-Green teaches an off-line feed rate scheduling method of a CNC machining process that is performed according to workpiece geometry and a given set of NC code provided from a CAD/CAM system (Abstract), the method comprising:

selecting a constraint variable and inputting a reference value related to the constraint variable (Col. 3, lines 9-45; constraint value of maximum distance  $d$ ; Fig. 1, the origin);

estimating a cutting configuration where a maximum constraint variable value occurs through ME Z-map modeling (Fig. 1, Col. 3, lines 9-45; Col. 2, lines 15-38, the mathematical expression defines a cutting edge path with respect to the work surface, wherein the cutting edge is moved in a series of successive segments defined on the path; each segment has maximum constraint variable  $d$ );

obtaining the estimated cutting configuration and estimating a specific rotation angle where the maximum constraint variable value occurs through constraint variable modeling (Col. 3, lines 49-65);

calculating a feed rate that satisfies the reference value related to the constraint variable at the estimated specific rotation angle (Col. 14, lines 5-19); and

applying the calculated feed rate to the NC code (Fig. 6, element 330; Col. 13, lines 53-57).

Referring to claim 3, Reid-Green teaches the method above, wherein computing cutting configurations through ME Z-map modeling comprises: searching for node points located in a cutting area (See fig. 1, elements 100 and 142); identifying whether a target node is an edge node or not (Col. 13, lines 24-28); calculating and updating a height value of each node in the cutting area (Col. 13, lines 29-37); moving a target node if it is an edge node and storing movement

direction angles (Col. 13, lines 46-52); computing the cutting configurations using the stored angles (Col. 13, lines 53-57).

Referring to claim 4, Reid-Green teaches the method above, wherein the cutting configurations computed through ME Z-map modeling include at least one of an entry angle, an exit angle, and an axial depth of cut (Col. 13, lines 53-57).

Referring to claim 5, Reid-Green teaches the method above, wherein in the case where a difference between a distance from a tool center to a target node and a tool radius is smaller than a movement limit, this node is designated as an edge node (See fig. 1).

Referring to claim 6, Reid-Green teaches the method above, wherein one of cutting force and machined surface error is selected as a constraint variable (Col. 12, lines 37-44).

#### *Response to Arguments*

6. Applicant's arguments, see page 10, filed May 13<sup>th</sup> 2005, with respect to the 35 U.S.C. 102(b) rejection of claim 7, have been fully considered and are persuasive. The 35 U.S.C. 102(b) rejection of claim 7 has been withdrawn.

7. Applicant's arguments filed May 13<sup>th</sup> 2005, with respect to the 35 U.S.C. 102(b) rejection of claims 1 and 13, have been fully considered but they are not persuasive.

8. Referring to claims 1 and 13, in response to applicant's arguments, the recitation "an off-line feed rate scheduling method" has not been given patentable weight because the recitation occurs in the preamble. A preamble is generally not accorded any patentable weight where it merely recites the purpose of a process or the intended use of a structure, and where the body of the claim does not depend on the preamble for completeness but, instead, the process steps or

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structural limitations are able to stand alone. See *In re Hirao*, 535 F.2d 67, 190 USPQ 15 (CCPA 1976) and *Kropa v. Robie*, 187 F.2d 150, 152, 88 USPQ 478, 481 (CCPA 1951).

9. Referring to claims 1 and 13, in response to applicant's argument that the references fail to show certain features of applicant's invention, it is noted that the features upon which applicant relies (i.e., reference cutting force or reference machine surface area which is the reference for feed rate scheduling, and the object of feed rate scheduling is to control the feed rate in order for a value of reference coding force or reference machine area to occur; the node moves in accordance with the movement of the tool; calculating a feed rate in which the reference cutting force or the reference machine surface area occurs; modifying the feed rate of the NC code into an optimum value; calculating a cutting configuration through a machine simulation with regard to the NC code therefore precisely simulating the change in workpiece depend upon movement of the tool) are not recited in the rejected claim(s). Although the claims are interpreted in light of the specification, limitations from the specification are not read into the claims. See *In re Van Geuns*, 988 F.2d 1181, 26 USPQ2d 1057 (Fed. Cir. 1993).

***Allowable Subject Matter***

10. Claims 2, 7, and 8 are objected to as being dependent upon a rejected base claim, but would be allowable if rewritten in independent form including all of the limitations of the base claim and any intervening claims.

11. Claims 9-12, 14, and 15 would be allowable if rewritten to overcome the rejection(s) under 35 U.S.C. 112, second paragraph, set forth in this Office action and to include all of the limitations of the base claim and any intervening claims.

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12. The following is a statement of reasons for the indication of allowable subject matter:

Referring to claims 2, 8-12, 14, and 15, neither Reid-Green nor the prior art of record teach calculating feed rates, reference forces, force components, or apparent variables of force component calculations using the formulae taught in claims 2, 8-12, 14, and 15.

Referring to claim 7, neither Reid-Green nor the prior art of record teach calculating a feed rate that satisfies a reference cutting force at a rotation angle where it is estimated that the maximum cutting force occurs through cutting force modeling.

***Conclusion***

**13. THIS ACTION IS MADE FINAL.** Applicant is reminded of the extension of time policy as set forth in 37 CFR 1.136(a).

A shortened statutory period for reply to this final action is set to expire **THREE MONTHS** from the mailing date of this action. In the event a first reply is filed within **TWO MONTHS** of the mailing date of this final action and the advisory action is not mailed until after the end of the **THREE-MONTH** shortened statutory period, then the shortened statutory period will expire on the date the advisory action is mailed; and any extension fee pursuant to 37 CFR 1.136(a) will be calculated from the mailing date of the advisory action. In no event, however, will the statutory period for reply expire later than **SIX MONTHS** from the mailing date of this final action.

14. Any inquiry concerning this communication or earlier communications from the examiner should be directed to Sean P. Shechtman whose telephone number is (571) 272-3754. The examiner can normally be reached on 9:30am-6:00pm, M-F.

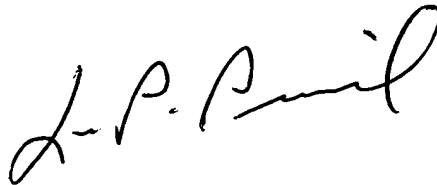
If attempts to reach the examiner by telephone are unsuccessful, the examiner's supervisor, Leo P. Picard can be reached on (571) 272-3749. The fax phone number for the organization where this application or proceeding is assigned is 703-872-9306.

Information regarding the status of an application may be obtained from the Patent Application Information Retrieval (PAIR) system. Status information for published applications may be obtained from either Private PAIR or Public PAIR. Status information for unpublished applications is available through Private PAIR only. For more information about the PAIR system, see <http://pair-direct.uspto.gov>. Should you have questions on access to the Private PAIR system, contact the Electronic Business Center (EBC) at 866-217-9197 (toll-free).

SPS

Sean P. Shechtman

May 24, 2005

A handwritten signature in black ink, appearing to read "L. P. Picard", written in a cursive style.

**LEO PICARD  
SUPERVISORY PATENT EXAMINER  
TECHNOLOGY CENTER 2100**